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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,536	05/08/2001	Jonathan Creasey	GJEL:0002/FLE SAH01509US	2589
27896	7590	03/14/2005	EXAMINER	
EDEL, SHAPIRO, FINNAN & LYTLE, LLC 1901 RESEARCH BOULEVARD SUITE 400 ROCKVILLE, MD 20850			MISLEH, JUSTIN P	
			ART UNIT	PAPER NUMBER
			2612	

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/851,536

Applicant(s)

CREASEY ET AL.

Examiner

Justin P Misleh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, and 4 - 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, and 4 - 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 8 October 2004 have been fully considered but they are not persuasive.
2. The Examiner accepts the Applicant's amendment to the title; however, the objection to the abstract stands for the reasons stated below.

Howorth reference

3. The Applicant argues that the Howorth reference "does not disclose a CCD having a 'phosphor bound to the light receiving surface thereof' as recited by the present claim" and continues with "the Examiner's interpretation is inconsistent with the cited reference, which states that forming the scintillator layer directly onto the photodetector is undesirable while teaching, instead, the bonding of the scintillator layer on a substrate to improve efficiency of the scintillator layer."
4. The Applicant's implication that the claim language "phosphor bound to the light receiving surface thereof" requires that the phosphor be formed directly onto the CCD is incorrect. In fact, the claim language "phosphor bound to the light receiving surface thereof" is written broadly enough such that it allows for an intermediate layer between the CCD and phosphor. In other words, the claim language allows for the phosphor to be directly formed onto an intermediate layer wherein the intermediate layer is directly formed onto the CCD, which as

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acknowledged by the Applicant is disclosed in Howorth. Furthermore, the ordinary meaning of the word “bound” in no way expressly requires directly attaching/forming thereto.

5. While in ordinary examination claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Valdna et al.

6. Initially, the Applicant states, “the Examiner has admitted that this [‘anti-stokes phosphor’ that ‘emits in the range of 950 nm to 1075 nm’] is not present in the Howorth reference”, which is misleading. The Examiner specifically stated that Howorth discloses an “anti-stokes phosphor” and that Howorth does not disclose wherein the phosphor “emits in the range of 950 nm to 1075 nm” (see Applicant’s response on pages 5, 6, 9, and 10). Furthermore, as clearly indicated in the Non-Final Rejection (25 June 2004), Valdna et al. was introduced to expressly provide a phosphor that emits in the range of 950 nm to 1075 nm regardless of the phosphor absorption range. At no point did the Examiner state, suggest, or imply that Valdna et al. provides an “anti-stokes phosphor”, as asserted by the Applicant.

7. Additionally, the Applicant states, “the Valdna et al. reference similarly teaches use of a phosphor that outputs visible light when illuminated by x-rays” and “consequently, the phosphors do not emit in any of the near infrared portion of the spectrum.” The Examiner believes Applicant’s statements are incorrect and misplaced because in the Non-Final rejection the Examiner relied on column 1 (lines 15 – 50) which specifically teach the use of phosphors that emit in the red or near-infrared wavelength range when illuminated x-rays.” Also, the

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wavelength range 950 nm to 1075 nm is fully incorporated in the near-infrared wavelength range; hence, Valdna et al. teach, *inter alia*, emission in the 950 nm – 1075 nm wavelength range.

8. Finally, the Applicant argues that the Howorth reference would be destroyed if modified by Valdna et al. on the basis that Howorth detects infrared radiation and the phosphors of Valdna et al. emit visible light. The Applicant's argument is unfounded because as stated above Valdna et al. teach emission in the near-infrared wavelength range.

Priority

9. Acknowledgment is made of Applicant's claim for foreign priority based on an application filed in Europe on 13 October 2000. It is noted, however, that Applicant has not filed a certified copy of the European application as required by 35 U.S.C. 119(b).

Specification

10. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means", "**comprising**", and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. **Claims 1, 2, 4, and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Howorth in view of Valdna et al.

13. For **Claim 1**, Howorth discloses, as shown in figure 2 and as stated on pages 2 (lines 21 – 33), 3 (lines 1 – 13), 10 (lines 23 – 25), 11 (lines 1 – 8), and in the abstract, a camera (see figure 2) comprising a charge-coupled device (CCD), the CCD (26) having an anti-stokes phosphor (29) bound to the light receiving surface thereof (the phosphor 29 is coupled to the light receiving surface of the CCD 26 by means of fiber optics 25); and a housing surrounding the CCD (26) and defining an aperture through which, in use, light can pass and be received by the phosphor (29; a housing is inherent or else the camera would be rendered ineffective for picture taking).

The phosphor is anti-stokes because the phosphor is sensitive to infrared radiation and emits visible radiation. Infrared radiation comprises wavelengths ranging from 1 micron to 750

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nanometers and visible radiation comprises wavelengths ranging from 750 nanometers to 400 nanometers. The radiation energy is directly proportional to the radiation frequency. Since, the radiation frequency is inversely proportional to the radiation wavelength, longer wavelengths have less energy and shorter wavelengths have more energy. The phosphor (29) absorbs infrared radiation, which has longer wavelengths and less energy, and emits visible radiation, which has shorter wavelengths and more energy.

In summary, Howorth discloses that the phosphor (29) emits in the visible light range comprising wavelengths 750 nanometers to 400 nanometers, while Howorth does not disclose wherein the phosphor (29) emits in the near infrared range comprising wavelengths ranging from 1100 nanometers to 800 nanometers and accordingly does not disclose emitting in the range of 950 nanometers to 1075 nanometers.

On the other hand, Valdna et al. also disclose a phosphor. More specifically, Valdna et al. disclose, as stated in columns 1 (lines 15 – 50) and 3 (lines 63 – 66), an improved phosphor having a peak emission in the red or near-infrared wavelength range. The near-infrared wavelength range comprises wavelengths ranging from 800 nanometers to 1100 nanometers, which includes the wavelength range 950 to 1075 nanometers.

As stated in column 1 (line 15 – 32) of Valdna et al., at the time the invention was made, it would have been obvious for one with ordinary skill in the art to include a phosphor having a peak emission including wavelengths ranging from 950 nanometers to 1075 nanometers, as taught by Valdna et al. in the camera with phosphor, disclosed by Howorth, for the advantage of matching the maximum quantum efficiency of the CCD while maintaining a low afterglow so as to achieve a high dynamic range and minimize ghost images and streaking.

14. As for **Claim 2**, Howorth discloses, a camera (see figure 2) according to Claim 1, wherein the anti-stokes phosphor (29) is sensitive to light in the wavelength range of 1500 nm to 1610 nm.

As stated above, infrared radiation comprises wavelengths ranging from 1 micron to 750 nanometers, which fully incorporates 1500 to 1610 nanometers.

15. As for **Claim 4** (please see objection above), Howorth discloses, a camera (see figure 2) according to Claim 1, comprising at least one filter (image forming lens 21) positioned between the aperture (inherently provided) and the phosphor (29) on the CCD (26).

The image forming lens (21) focuses light onto the phosphor (29). The image forming lens (21) captures a limited field of view with respect to the three dimensional continuous environment that the camera is in when capturing images; therefore, the image forming lens (21) filters to the three dimensional continuous environment to form the capture field of view.

16. As for **Claim 7**, Howorth discloses, a camera according to Claim 1, wherein the phosphor (29) is bound to the CCD by an adhesive (optical cement 24). As stated in Claim 1, the phosphor (29) is bound to the CCD (26), wherein the phosphor (29) is coupled face-to-face via fiber optics (25) to the CCD (26) such that visible light emitted from the phosphor (29) is received by the CCD (26). The phosphor (29) is coupled to the fiber optics (25) by means of optical cement (24).

17. **Claims 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Howorth in view of Valdna et al. further in view of Ohwaki et al.

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18. As for **Claim 5**, Howorth discloses a phosphor (29). However, Howorth in view of Valdna et al. do not disclose wherein the phosphor comprises ErYb in a host phosphor matrix.

On the other hand, Ohwaki et al. also disclose a phosphor. More specifically, Ohwaki et al. disclose, as stated in columns 4 (lines 43 – 54) and 6 (lines 33 – 47), a phosphor comprising ErYb in a host phosphor matrix.

As stated in column 2 (lines 13 – 42) of Ohwaki et al., at the time the invention was made, it would have been obvious to one with ordinary skill in the art to include a phosphor comprising ErYb in a host phosphor matrix, as taught by Ohwaki et al., in the camera with phosphor, disclosed by Howorth in view of Valdna et al., for the advantage of providing a phosphor with a high conversion efficacy wherein the emitting intensity is not lowered.

19. As for **Claim 6**, Ohwaki et al. disclose, as stated in column 4 (lines 43 – 54), that the phosphor may be comprised of rare earth ions and fluorides, oxyfluorides, and oxychlorides. The claim language requires a host phosphor matrix comprising one of Y_2O_2S , YF_3 , $NaYF_4$ and La_2O_2S . Yttrium Fluoride (YF_3) is a fluoride and therefore, Ohwaki et al. meets the claim.

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 703.305.8090 (571.272.7313 ~ March 2005). The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 5:00 PM and on alternating Fridays from 8:00 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wendy R Garber can be reached on 703.305.4929. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
March 10, 2005


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